

# **EXHIBIT K**

**FILED UNDER SEAL**

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## Exhibit 033-1

**Invalidity Claim Chart for U.S. Patent No. 10,779,033 (“the ’033 patent”)**

**Google’s Tungsten (“the Tungsten System”)** was described in a printed publication, or in public use, on sale, sold, known in this country, or otherwise available to the public before the priority date of the ’033 patent. For example, the Tungsten System was publicly demonstrated at least by May 10, 2011 at Google I/O 2011. Features of the of Tungsten System would have been apparent to a person of ordinary skill in the art using the public system, rendering the system itself § 102(a), (b) and (g) prior art.

At least the following documents describe the functionality of the Tungsten System:

- [1] <https://www.youtube.com/watch?v=OxzucwjFEs&t=2808s>, Google I/O 2011, Keynote Day 1, uploaded May 10, 2011
- [2] Tungsten Requirements
- [3] US 9,846,767
- [4] <https://www.youtube.com/watch?v=9ZlgcuG3sZc>, uploaded May 10, 2011
- [5] <https://www.youtube.com/watch?v=FC90GqKNGd8>, uploaded May 10, 2011

Google also relies on Google source code<sup>1</sup>, both server-side code and device-side code, including any written source code, source code in production, and released source code, including the exemplary code paths referred to below. Google expressly reserves the right to rely on additional source code at a later time.

Google may rely on one or more physical Tungsten/Nexus Q devices, which are available for inspection at Quinn Emanuel’s San Francisco office.

To the extent publicly available, these documents and devices themselves are also each individually prior art under § 102(a) and (b) and § 103 based on their dates of publication and public availability.

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<sup>1</sup> Google has made available for inspection and cited in this chart versions of the source code for the Tungsten/NexusQ that predate the December 30, 2011 priority date that Sonos identified in its invalidity contentions. Google is also making available for inspection earlier versions of the source code that predate Sonos’s alleged invention date of July 15, 2011. While Google does not agree that Sonos is entitled to its alleged invention date, to the extent Sonos is entitled to such date Google may rely upon the same or similar functionality in the earlier versions of that source code.

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Google identifies the authors, designers and implementers of the documents and source code identified and cited herein as prior inventors for purposes of Section 102(g), including but not limited to Eugene Koh, Jason Simmons, John Grossman, and Dmitry Dolinsky.

To the extent it is argued the Tungsten System does not disclose any element, that element would be obvious based on the state of the art and/or in combination with one or more of the references noted in Riders I-K.

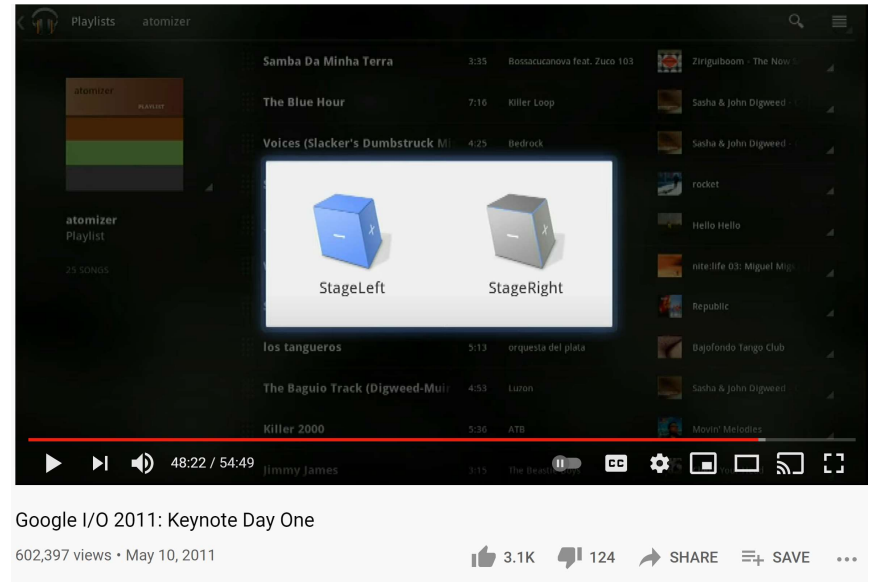
To avoid duplication and cumulative excerpts, exemplary quotations and citations are provided. The citations to portions of any reference in this chart are exemplary only. Google reserves the right to use the entirety of any reference cited in this chart to show that the asserted claims are anticipated and/or obvious, or to show the state of the art at the relevant time. References to figures should be understood to also refer to any accompanying text. Additional support can be found elsewhere in the prior art reference, and Google expressly reserves the right to rely on such other support and passages at a later time. The use of claim terms in the below chart is based on Sonos' construction of claim terms in its infringement contentions as understood by Google, as well as the plain and ordinary meaning of the claim terms. This chart should not be construed as consenting to or agreeing with Sonos' construction of claim terms. Because discovery is ongoing, Google reserves all rights to amend its invalidity contentions based on new information produced in discovery.

Google expressly reserves the right to supplement its invalidity contentions, including this chart, to demonstrate that the prior art invalidates the claims of the '033 patent.

Claim Portion	Claim Element	Tungsten System
[1Pre]	<i>A computing device comprising: at least one processor; a non-transitory computer-readable medium; and program instructions stored on the non-transitory computer-readable medium that, when executed by the at least one processor, cause the computing device to perform functions comprising:</i>	<p>Tungsten System discloses a computing device (e.g. a phone or computer) having at least one processor, a non-transitory computer readable medium; and program instructions stored on the non-transitory computer-readable medium that, when executed by the at least one processor, cause the computing device to perform the recited functions.</p> <p>See e.g. [1] (a tablet running Android OS and the Android@Home Framework):</p> <p>“You can imagine that this device is playing music in, say, your living room. If we take a look at the <b>tablet Anand is using</b>, we can see he's in the music app. <i>But there's a new feature to select an output device. The tablet</i> can direct music to <i>one or more Tungsten boxes</i> like the one we have here. Anand, why don't you start music</p>

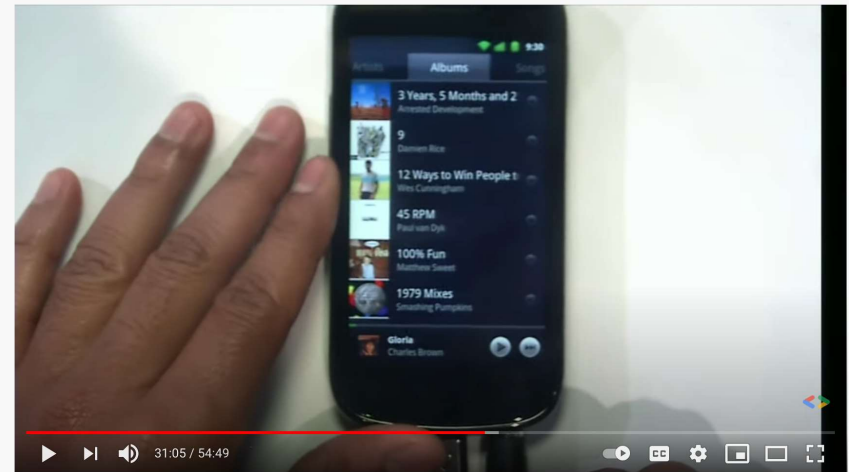
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on both of them. You can enjoy your music *synchronized throughout your house*, all streaming through Music Beta<sup>2</sup>. When Anand tapped on those buttons, the music stream was sent transparently from one box to another. Since the boxes are running Android, *they just pull the music directly from the music library in the cloud.*” (Joe Britt)



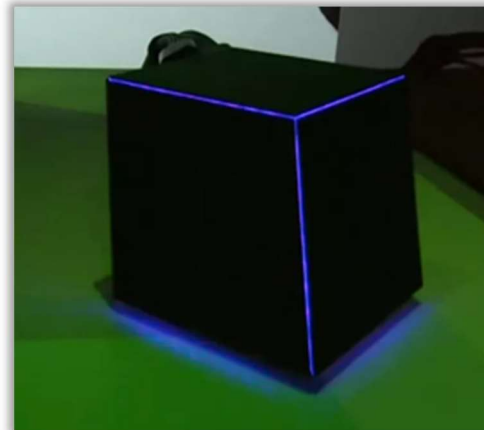
See e.g. [1] (Music Beta application on phone):

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*See e.g. [1]:*



*See e.g. [2]:*

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## Tungsten Requirements

SUMMARY OF REQUIREMENTS RELATED TO MUSIC APP SUPPORT FOR TUNGSTEN DEVICES FOR FIRST RELEASE - WORK IN PROGRESS

### Intro

For the Eagles release Music app is required to support control of the music playback on tungsten device or a set of tungsten devices acting as "speakers". Tungsten device itself does not have any user interface. Users "tell" tungsten what music to play by connecting Music app running on their Android phone or tablet and selecting songs to play from their collection. When Music app is connected to a tungsten, it reflects what's being playing on the tungsten and allows users to pause/resume play, skip to next song, go to previous song, etc. This android phone/tablet device is called **Controlling Device**.

Tungsten playback has two modes:

- Party mode
- Single mode (also referred to as non-party mode occasionally here)

**Party Mode** allows multiple users connect to the same tungsten device and add their music to a common *Play Queue* maintained by the tungsten.

**Single Mode** allows only user of a particular google account to connect to the tungsten. Note, however, that even in a single mode multiple controlling devices can be connected to the tungsten simultaneously as long as they use the same google (skyjam) account. (The current term for "party" used in UI mocks is "social mix").

## Music App on Tungsten

In addition to providing controlling functionality on phone/tablet Music app is deployed on tungsten to

- download music from skyjam server and play it
- manage and broadcast play state
- manage and broadcast play queue

Tungsten device is expected to have limited storage. With respect to caching, Music app running on tungsten:

- will not cache music long term
- prefetch only one song ahead of current playback

Music app is expected to be updated silently through Market on tungsten device. However, there is no guarantee that same version of the music app will be used on controlling device and tungsten device.

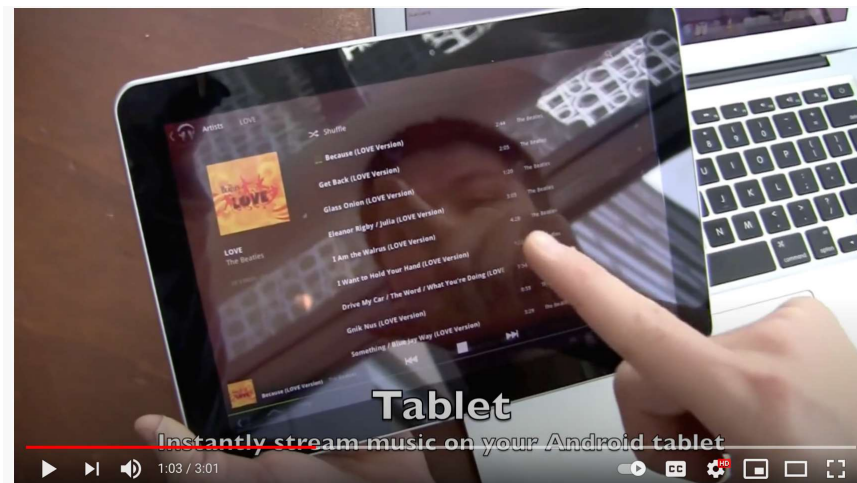
The underlying communication protocol must be designed to handle version mismatch gracefully allowing either prompting the user to upgrade (controlling device or tungsten) or providing compatibility in later version of the app with earlier ones.

See [3] e.g. at Abstract, 18:63-19:9, 22:64-26:54, Fig. 7.

See e.g. [4]:

“you can also access [Music beta] on a tablet, we have a tablet 10.1 special google edition”

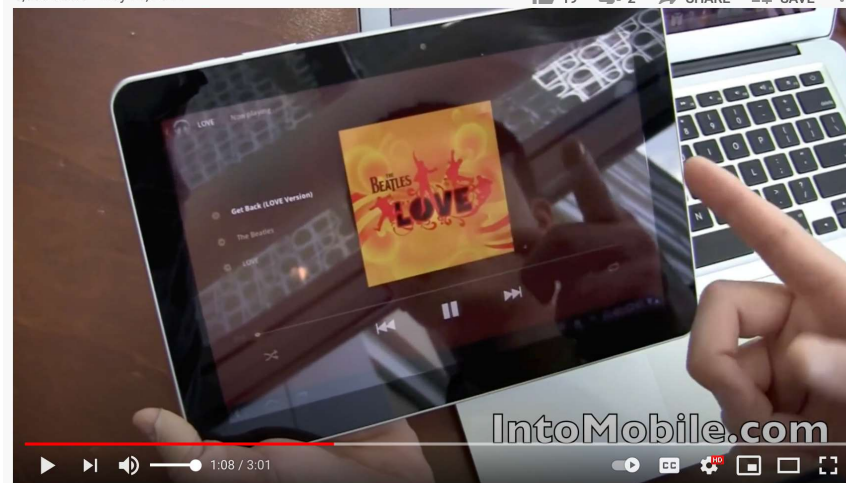
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Google Music beta demo from Google I/O 2011

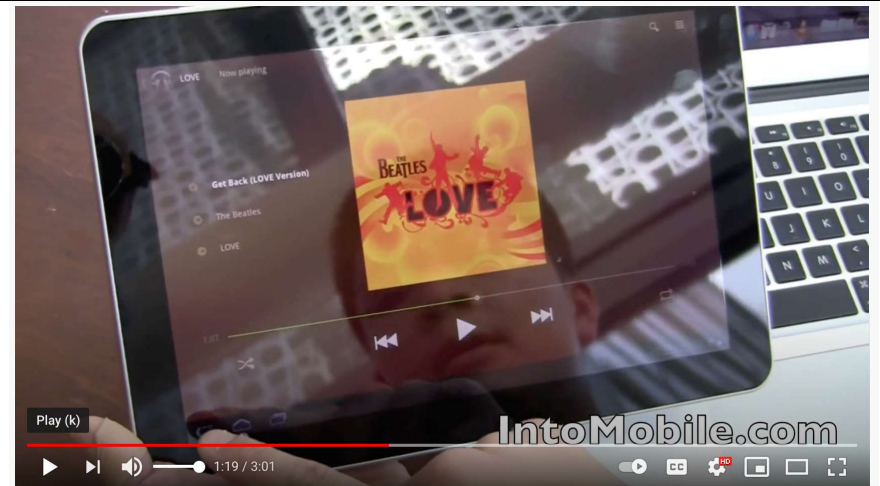
5,350 views · May 10, 2011

19 2 SHARE SAVE ...



Google Music beta demo from Google I/O 2011

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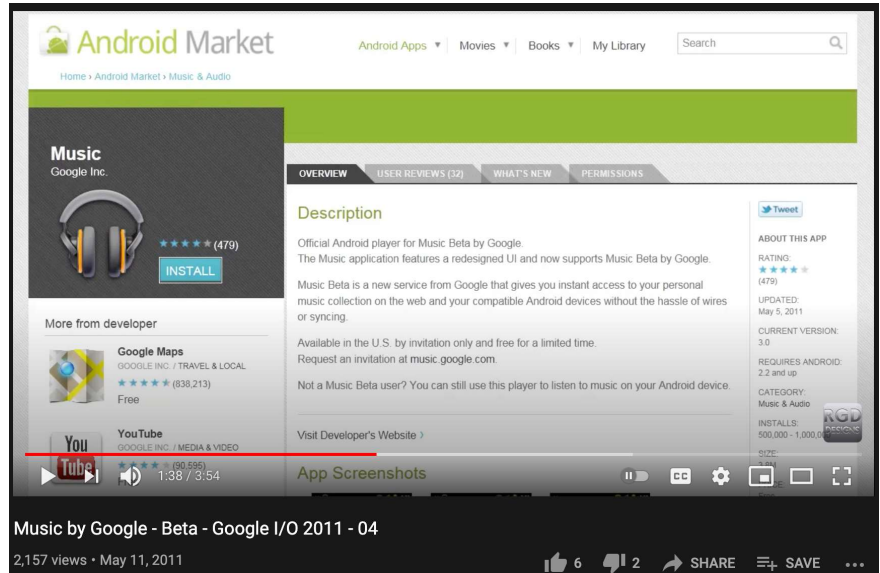


Google Music beta demo from Google I/O 2011

5,350 views • May 10, 2011

19 2 SHARE SAVE ...

See e.g. [5]:



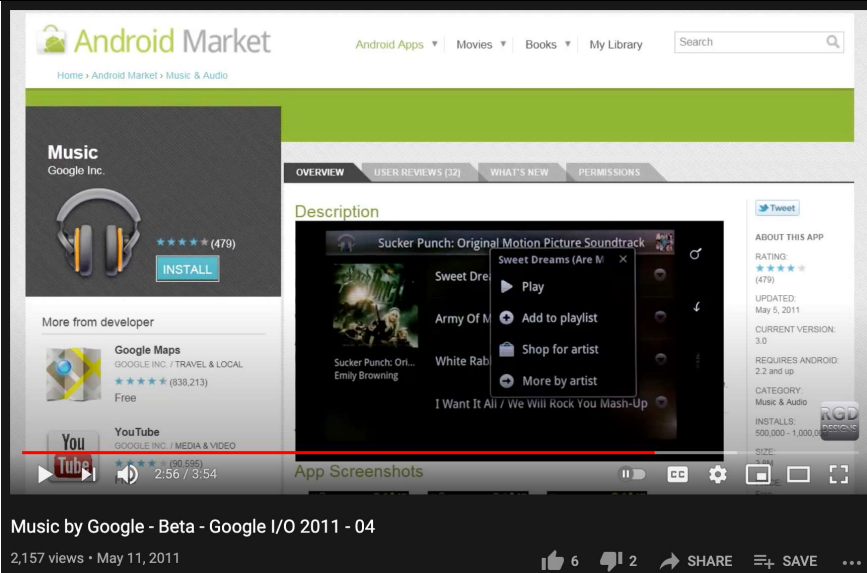
Music by Google - Beta - Google I/O 2011 - 04

2,157 views • May 11, 2011

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		 <p>See for example source code for the Android application before 12.30.2011, including for example source code located in subdirectory "vendor/unbundled_google/packages/Music2" in top level directories, e.g.: froyo-ub-music, fy-ub-a@h-core, and master-ub-music2-aah.</p> <p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Riders I-J. Further discussion of the obviousness of this claim element is provided in Google's Invalidity Contentions Cover Pleading.</p>
[1a]	operating in a first mode in which the computing device is configured for playback of a remote playback queue provided by a cloud-based computing system associated with a cloud-based media service;	Tungsten System discloses the computing device (e.g. a phone or computer) operating in a first mode in which the computing device is configured for playback of a remote playback queue provided by a cloud-based computing system associated with a cloud-based media service.

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See e.g. [1]

“the functionality that you’ve seen here, it’ll be part of the Android@Home framework”



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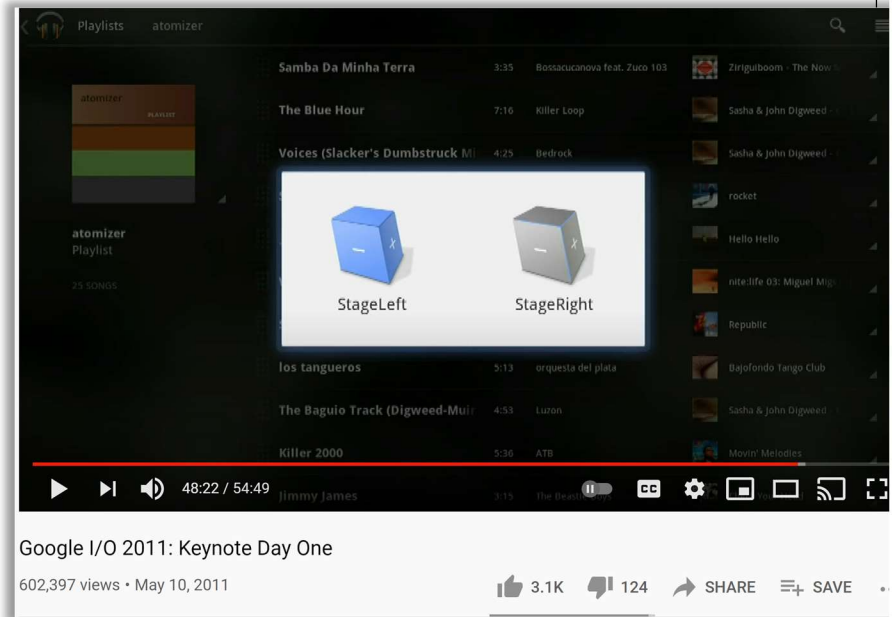
“A Tungsten device runs the Android OS and the Android@Home Framework. *It’s always powered on and always connected to the cloud*”

“Paul showed you *our music beta service on a phone and a tablet*. Here, we have *the same music service but working with these new devices*”

“You can imagine that this device is playing music in, say, your living room. If we take a look at the tablet Anand is using, we can see he's in the music app. *But there's a new feature to select an output device*. The tablet can direct music to *one or more Tungsten boxes* like the one we have here. Anand, why don't you start music on both of them. You can enjoy your music *synchronized*

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*throughout your house, all streaming through Music Beta. When Anand tapped on those buttons, the music stream was sent transparently from one box to another. Since the boxes are running Android, they just pull the music directly from the music library in the cloud.” (Joe Britt)*



See e.g. [2]:

## Nice-to-haves

Not committed but desirable features:

- Seamless transfer of the play queue from local playback to tungsten (in single mode) and back. In other words to have the playback to follow the user. Example:
  - listen to the music while driving
  - pull into your garage - the playback is switched to tungsten
  - grab your phone and walk out of the house to get some groceries - the playback is switched from the tungsten back to your phone
- Multi-speaker volume button should reflect the level of tungsten master volume when connected to tungsten and local music volume otherwise
- Volume buttons should affect tungsten volume when used while Music app is the current activity

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	<p><i>See e.g.</i> [3] e.g. at 9:39-67:</p> <p>The system 200 generally is made up of client-side devices and server-side systems that communicate through one or more networks 206 that include the internet. The devices include a smart phone 202 and an amplified music system 226. The smartphone 202 may be a standard computing device that is capable of executing built-in applications and applications that may be loaded onto the smartphone 202 by a user of the device. One such application is a music application 214 which may be part of a media player that is capable of receiving media files, such as files in a standard form for music, video, e-books, video games, and other similar forms of media, and of rendering them in a familiar manner, such as by playing a music file so that a user of the smart phone 202 can listen to the music through headphones connected to the smartphone 202. The music application 214 may be programmed to stream music from remote servers through the network 206 and may interact with a user to identify music that is available to the user, to add such music, and to otherwise manage the music. Other components on the smartphone 202 may assist a user is adding music to his or her account with a cloud-based service. Such components may, for example, permit a user to expose a piece of physical media, such as a CD or DVD jewel case, to the smartphone 202 so that the smart phone 202 may identify the piece of physical media to a cloud-based music service, and thereby obtain access to cloud-based copies of content that is on the piece of physical media, is represented by the piece of physical media, or that directly corresponds to the piece of physical media.</p> <p><i>See e.g.</i> [3] at 22:22-27:</p> <p>Various forms of streaming media 684 may be requested by the mobile computing device 610. For example, computing device 610 may request a stream for a pre-recorded video file, a live television</p>
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program, or a live radio program. Example services that provide streaming media include YOUTUBE and PANDORA.

*See e.g.* [4]



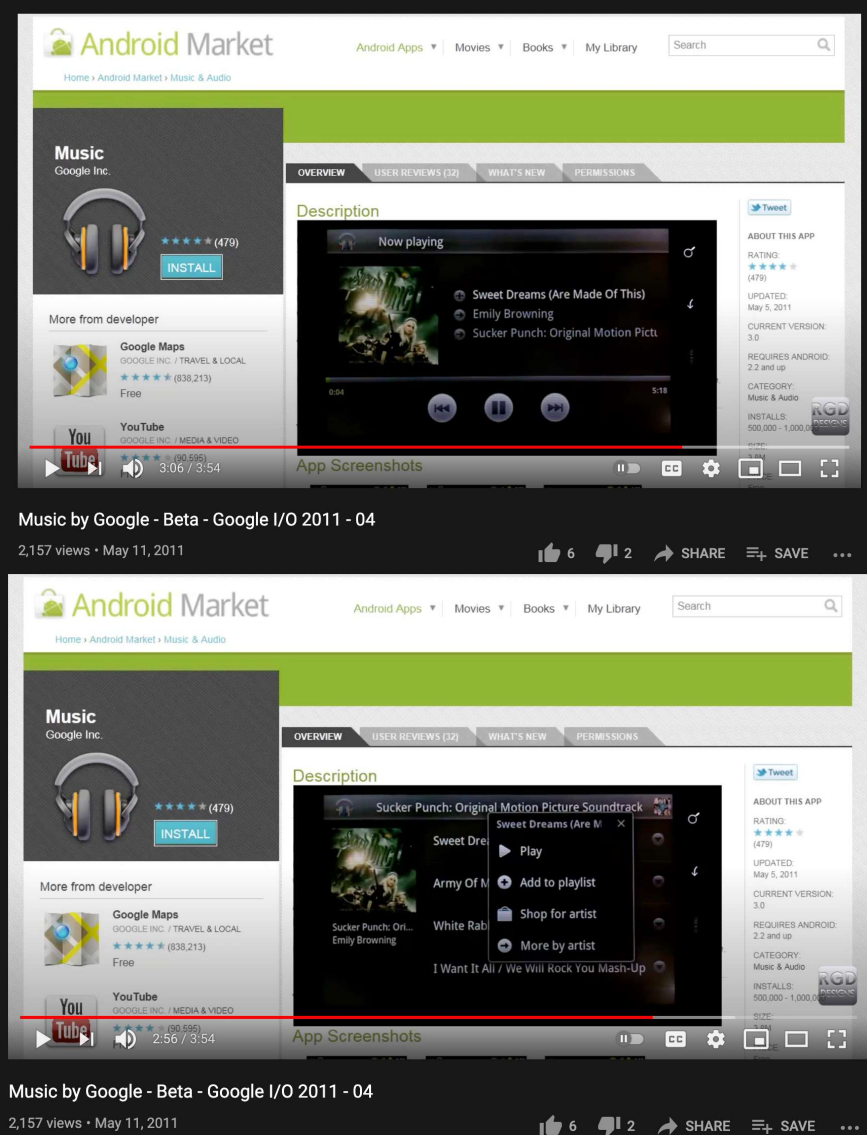
Google Music beta demo from Google I/O 2011

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*See* [5]

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See for example source code for the Android application before 12.30.2011, including for example source code located in

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		<p>subdirectory “vendor/unbundled_google/packages/Music2” in top level directories e.g.: froyo-ub-music-, fy-ub-a@h-core, and master-ub-music2-aah. <i>See also</i> AAH<sup>3</sup> support code in libraries athome/Core and athome/libs-aah. <i>See also</i> for example, source code located in subdirectory ATHOME/google_athome/blockhead/src/com/timco/blocks/.</p> <p><i>See also</i>  e.g.:ATHOME<sup>4</sup>/google_athome/blockhead/src/com/timco/blocks/blockhead/service;  ATHOME/google_athome/blockhead/src/com/timco/blocks/blockhead/db;  ATHOME/google_athome/gumby/src/com/timoco/blocks;  AAH/vendor/unbundled_google/packages/Music2/src/com/google/android/music/dl.</p> <p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Rider I. Further discussion of the obviousness of this claim element is provided in Google’s Invalidity Contentions Cover Pleading.</p>
[1b]	<p><i>while operating in the first mode, displaying a representation of one or more playback devices in a media playback system that are each i) communicatively coupled to the computing device over a data network and ii) available to accept playback responsibility for the remote playback queue;</i></p>	<p>The Tungsten System discloses while operating in the first mode, displaying a representation of one or more playback devices in a media playback system that are each i) communicatively coupled to the computing device over a data network and ii) available to accept playback responsibility for the remote playback queue.</p> <p><i>See e.g.</i> [1]  “the functionality that you’ve seen here, it’ll be part of the Android@Home framework”</p>

<sup>3</sup> Throughout “AAH” refers to sonos3\_source\_code\_pull\_two/fy-ub-a@h-core/

<sup>4</sup> Throughout “ATHOME” refers to sonos3\_source\_code\_pull\_two/2011-12-31-athome/



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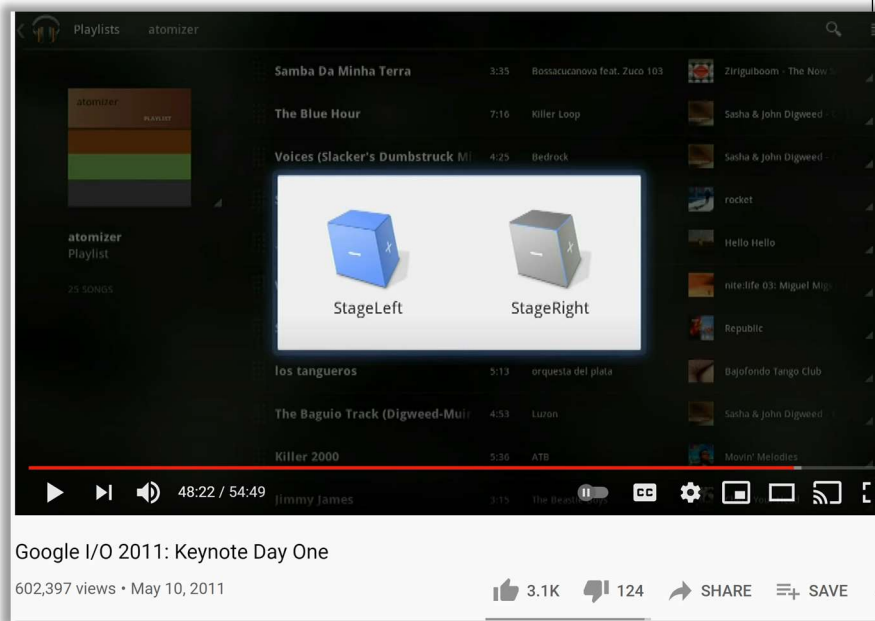
“A Tungsten device runs the Android OS and the Android@Home Framework. *It’s always powered on and always connected to the cloud*”

“Paul showed you *our music beta service on a phone and a tablet*. Here, we have *the same music service but working with these new devices*”

“You can imagine that this device is playing music in, say, your living room. If we take a look at the tablet Anand is using, we can see he's in the music app. *But there's a new feature to select an output device*. The tablet can direct music to *one or more Tungsten boxes* like the one we have here. Anand, why don't you start music on both of them. You can enjoy your music *synchronized throughout your house*, all *streaming through Music Beta*. When Anand tapped on those buttons, the music stream was sent transparently from one box to another. Since the boxes are running Android, *they just pull the music directly from the music library in the cloud.*” (Joe Britt)



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See e.g. [2]:

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In addition to providing controlling functionality on phone/tablet Music app is deployed on tungsten to

- download music from skyjam server and play it
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- manage and broadcast play queue

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- will not cache music long term
- prefetch only one song ahead of current playback


See e.g. [3] at 7:61-8:14:

Once the streaming server system 114 receives an affirmative response from the registration server system 112, as shown by the arrows and box D, the streaming server system 114 may stream the media content to the device 102, as shown at Box E. In some implementations, the device 102 may forward or redirect the

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		<p>streaming data to the device 116, using a Bluetooth or similar data connection. In another example, the device 102 may have been moved in close proximity to the desktop stereo 116, as a result of NFC structures in both devices previously causing one of the devices to identify the other device, such as by the desktop stereo 116 obtaining a user identifier of the device 102. Such interaction may cause the desktop stereo 116 to automatically request music from a playlist for the user account of the user of device 102, so that the desktop stereo 116 automatically begin playing the music. In such a mode of operation, the device 102 may be used as a remote control, such as to fast-forward, rewind, or skip through songs in the playlist. Also, the transactions between the client devices and the servers in this example may be through one or more networks including the Internet 120.</p> <p><i>See</i> for example source code for the Android Nexus Q and Music 2 applications before 12.30.2011, including for example source code located in subdirectory “vendor/unbundled_google/packages/Music2” in top level directories e.g.: froyo-ub-music, fy-ub-a@h-core, and master-ub-music2-aah. <i>See also</i> AAH support code in athome/Core/ and libraries in athome/libs-aah. <i>See also</i> for example, source code located in subdirectories ATHOME/google_athome/gumby, and ATHOME/google_athome/blockhead/src/com/timco/blocks.</p> <p><i>See also e.g.:</i> ATHOME/google_athome/gumby; ATHOME/google_athome/gumby/res/layout; ATHOME/google_athome/gumby/src/com/timco/blocks/gumby/activities; ATHOME/google_athome/gumby/src/com/timco/blocks; ATHOME/google_athome/blockhead/src/com/timco/blocks; AAH/vendor/unbundled_google/packages/Music2/src/com/google/android/music.</p>
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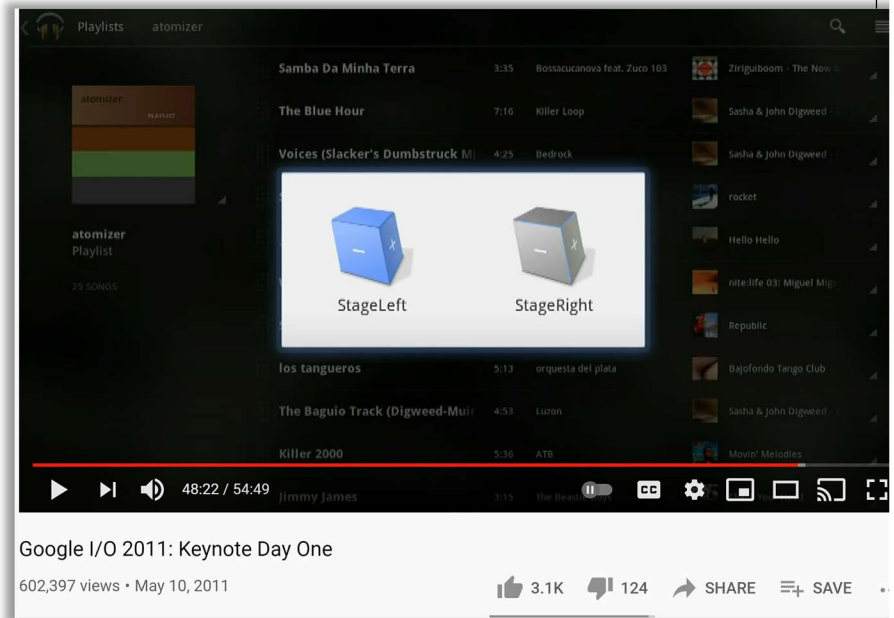
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		<p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with prior art including the references cited in Rider J. Further discussion of the obviousness of this claim element is provided in Google’s Invalidity Contentions Cover Pleading.</p>
[1c]	<p><i>while displaying the representation of the one or more playback devices, receiving user input indicating a selection of at least one given playback device from the one or more playback devices;</i></p>	<p>The Tungsten System discloses while displaying the representation of the one or more playback devices, receiving user input indicating a selection of at least one given playback device from the one or more playback devices;</p> <p>See e.g. [1]  “the functionality that you’ve seen here, it’ll be part of the Android@Home framework”</p>  <p>Google I/O 2011: Keynote Day One  602,397 views • May 10, 2011</p> <p>3.1K 124 SHARE SAVE</p> <p>“A Tungsten device runs the Android OS and the Android@Home Framework. <i>It’s always powered on and always connected to the cloud</i>”</p>

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See e.g. [2]:

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*See e.g.* [3] at 7:61-8:14:

Once the streaming server system 114 receives an affirmative response from the registration server system 112, as shown by the arrows and box D, the streaming server system 114 may stream the media content to the device 102, as shown at Box E. In some implementations, the device 102 may forward or redirect the streaming data to the device 116, using a Bluetooth or similar data connection. In another example, the device 102 may have been moved in close proximity to the desktop stereo 116, as a result of NFC structures in both devices previously causing one of the devices to identify the other device, such as by the desktop stereo 116 obtaining a user identifier of the device 102. Such interaction may cause the desktop stereo 116 to automatically request music from a playlist for the user account of the user of device 102, so that the desktop stereo 116 automatically begin playing the music. In such a mode of operation, the device 102 may be used as a remote control, such as to fast-forward, rewind, or skip through songs in the playlist. Also, the transactions between the client devices and the servers in this example may be through one or more networks including the Internet 120.

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		<p>ub-music2-aah. See also AAH support code in athome/Core/ and libraries in athome/libs-aah.</p> <p><i>See also</i> for example, source code located in subdirectory ATHOME/google_athome/gumby.</p> <p><i>See also e.g.:</i> ATHOME/google_athome/gumby/res/layout; ATHOME/google_athome/gumby/src/com/timco/blocks/gumby/activities; ATHOME/google_athome/gumby/src/com/timoco/blocks/gumby/service.</p> <p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Rider J. Further discussion of the obviousness of this claim element is provided in Google's Invalidity Contentions Cover Pleading.</p>
[1d]	<i>based on receiving the user input, transmitting an instruction for the at least one given playback device to take over responsibility for playback of the remote playback queue from the computing device,</i>	<p>The Tungsten System discloses based on receiving the user input, transmitting an instruction for the at least one given playback device to take over responsibility for playback of the remote playback queue from the computing device;</p> <p><i>See e.g.</i> [1]  “the functionality that you’ve seen here, it’ll be part of the Android@Home framework”</p>

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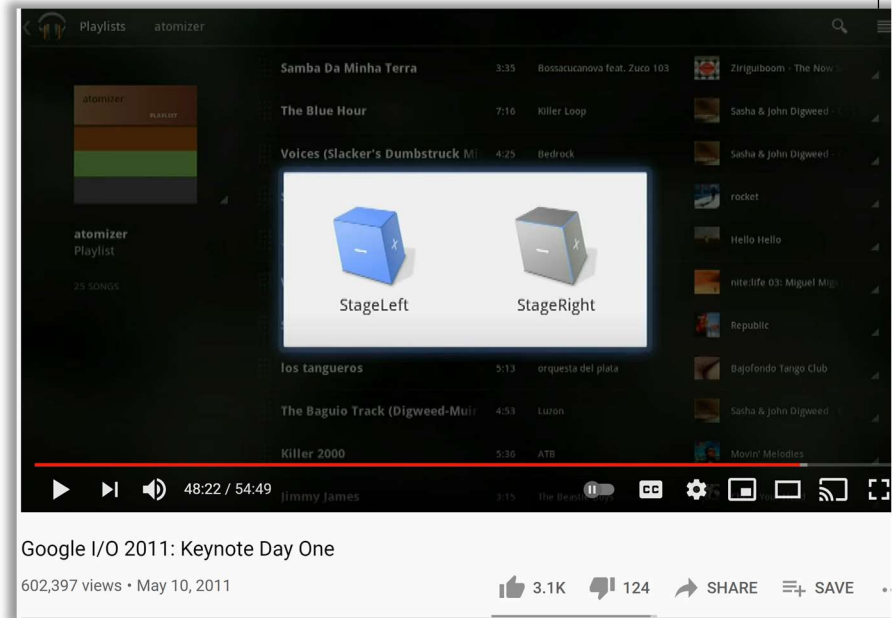
3.1K 124 SHARE SAVE ...

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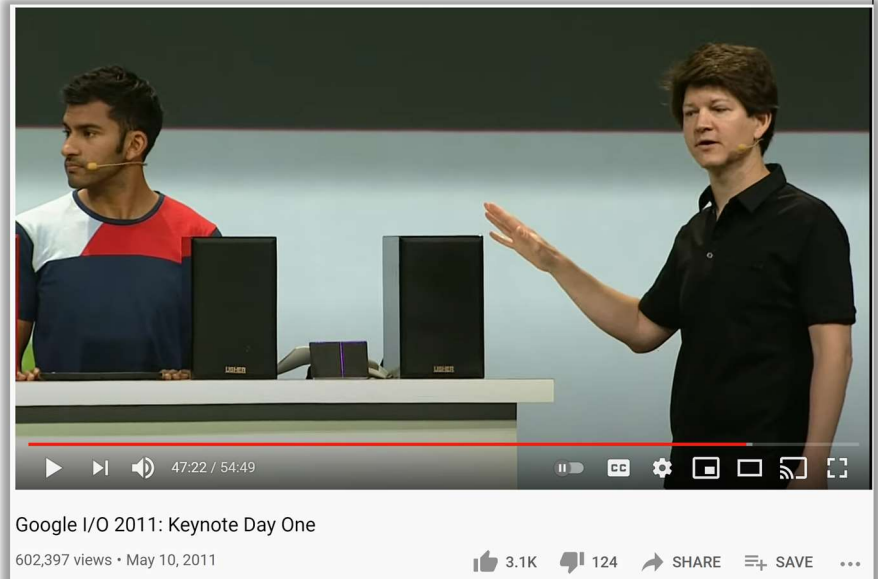
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		<p>streaming data to the device 116, using a Bluetooth or similar data connection. In another example, the device 102 may have been moved in close proximity to the desktop stereo 116, as a result of NFC structures in both devices previously causing one of the devices to identify the other device, such as by the desktop stereo 116 obtaining a user identifier of the device 102. Such interaction may cause the desktop stereo 116 to automatically request music from a playlist for the user account of the user of device 102, so that the desktop stereo 116 automatically begin playing the music. In such a mode of operation, the device 102 may be used as a remote control, such as to fast-forward, rewind, or skip through songs in the playlist. Also, the transactions between the client devices and the servers in this example may be through one or more networks including the Internet 120.</p> <p><i>See e.g.</i> [3] at 22:22-27:  Various forms of streaming media 684 may be requested by the mobile computing device 610. For example, computing device 610 may request a stream for a pre-recorded video file, a live television program, or a live radio program. Example services that provide streaming media include YOUTUBE and PANDORA.  <i>See</i> for example source code for the Android Music2 application before 12.30.2011, including for example source code located in subdirectory "vendor/unbundled_google/packages/Music2" in top level directories e.g.: froyo-ub-music, fy-ub-a@h-core, and master-ub-music2-aah. <i>See also</i> AAH support code in athome/Core/ and libraries in athome/libs-aah and athome/tungsten. <i>See also</i> for example, source code located in subdirectory  ATHOME/google_athome/gumby/.</p> <p><i>See also e.g.:</i>  ATHOME/google_athome/gumby/src/com/timco/blocks/gumby/activities;  ATHOME/google_athome/gumby/src/com/timoco/blocks/gumby/s</p>
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		<p>ervice;  AAH/vendor/unbundled_google/packages/Music2/src/com/google/android/music/athome;  AAH/vendor/unbundled_google/packages/Music2/src/com/google/android/music.</p> <p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Riders I-J. Further discussion of the obviousness of this claim element is provided in Google's Invalidity Contentions Cover Pleading.</p>
[1e]	<p><i>wherein the instruction configures the at least one given playback device to (i) communicate with the cloud-based computing system in order to obtain data identifying a next one or more media items that are in the remote playback queue, (ii) use the obtained data to retrieve at least one media item in the remote playback queue from the cloud-based media service; and (iii) play back the retrieved at least one media item;</i></p>	<p>The Tungsten System discloses that the instruction configures the at least one given playback device to (i) communicate with the cloud-based computing system in order to obtain data identifying a next one or more media items that are in the remote playback queue, (ii) use the obtained data to retrieve at least one media item in the remote playback queue from the cloud-based media service; and (iii) play back the retrieved at least one media item;</p> <p><i>See e.g. [1]</i>  “the functionality that you’ve seen here, it’ll be part of the Android@Home framework”</p>

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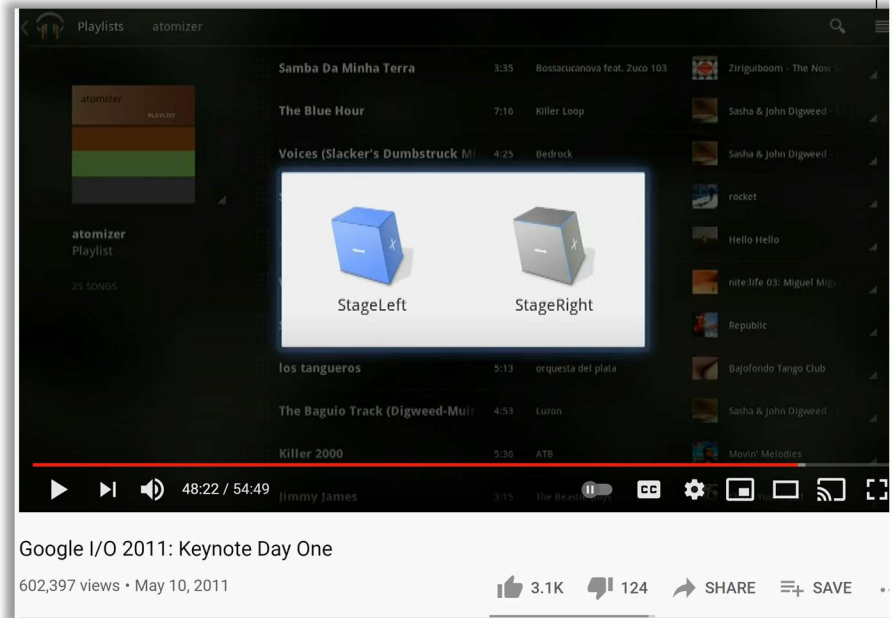


“A Tungsten device runs the Android OS and the Android@Home Framework. *It’s always powered on and always connected to the cloud*”

“Paul showed you *our music beta service on a phone and a tablet*. Here, we have *the same music service but working with these new devices*”

“You can imagine that this device is playing music in, say, your living room. If we take a look at the tablet Anand is using, we can see he’s in the music app. *But there’s a new feature to select an output device*. The tablet can direct music to *one or more Tungsten boxes* like the one we have here. Anand, why don’t you start music on both of them. You can enjoy your music *synchronized throughout your house*, all *streaming through Music Beta*. When Anand tapped on those buttons, the music stream was sent transparently from one box to another. Since the boxes are running Android, *they just pull the music directly from the music library in the cloud.*” (Joe Britt)

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See e.g. [2]:

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In addition to providing controlling functionality on phone/tablet Music app is deployed on tungsten to

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- manage and broadcast play state
- manage and broadcast play queue

Tungsten device is expected to have limited storage. With respect to caching, Music app running on tungsten:

- will not cache music long term
- prefetch only one song ahead of current playback

See e.g. [3] at 7:61-8:14:

Once the streaming server system 114 receives an affirmative response from the registration server system 112, as shown by the arrows and box D, the streaming server system 114 may stream the media content to the device 102, as shown at Box E. In some implementations, the device 102 may forward or redirect the streaming data to the device 116, using a Bluetooth or similar data

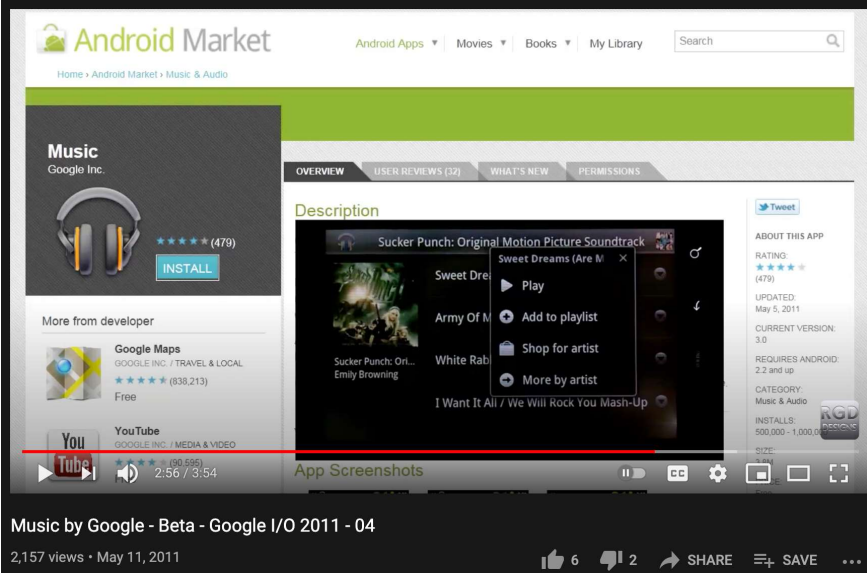
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connection. In another example, the device 102 may have been moved in close proximity to the desktop stereo 116, as a result of NFC structures in both devices previously causing one of the devices to identify the other device, such as by the desktop stereo 116 obtaining a user identifier of the device 102. Such interaction may cause the desktop stereo 116 to automatically request music from a playlist for the user account of the user of device 102, so that the desktop stereo 116 automatically begin playing the music. In such a mode of operation, the device 102 may be used as a remote control, such as to fast-forward, rewind, or skip through songs in the playlist. Also, the transactions between the client devices and the servers in this example may be through one or more networks including the Internet 120.

*See e.g.* [4]



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		<p>See e.g. [5]</p>  <p>See for example source code for the Android NexusQ application before 12.30.2011, including for example source code located in subdirectories for AAH support code in athome/Core/ and libraries in athome/libs-aah, and athome/tungsten. . See also for example, source code located in subdirectory ATHOME/google_athome/blockhead/src/com/timco/blocks/blockhead/service.</p> <p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Riders I-J. Further discussion of the obviousness of this claim element is provided in Google's Invalidity Contentions Cover Pleading.</p>
[1f]	<p><i>detecting an indication that playback responsibility for the remote playback queue has been successfully transferred from the computing device to the at least one given playback device; and</i></p>	<p>The Tungsten System discloses detecting an indication that playback responsibility for the remote playback queue has been successfully transferred from the computing device to the at least one given playback device.</p>

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See e.g. [1]

“the functionality that you’ve seen here, it’ll be part of the Android@Home framework”



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“A Tungsten device runs the Android OS and the Android@Home Framework. *It’s always powered on and always connected to the cloud*”

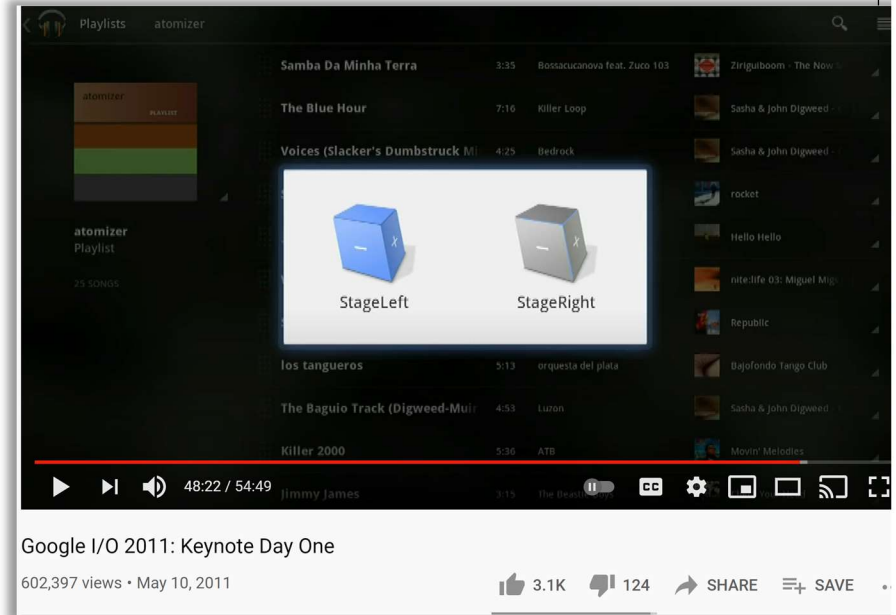
“Paul showed you *our music beta service on a phone and a tablet*. Here, we have *the same music service but working with these new devices*”

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transparently from one box to another. Since the boxes are running Android, they just pull the music directly from the music library in the cloud.” (Joe Britt)



See e.g. [2]:

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See e.g. [3] at 7:61-8:14:


Once the streaming server system 114 receives an affirmative response from the registration server system 112, as shown by the arrows and box D, the streaming server system 114 may stream the



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		<p>media content to the device 102, as shown at Box E. In some implementations, the device 102 may forward or redirect the streaming data to the device 116, using a Bluetooth or similar data connection. In another example, the device 102 may have been moved in close proximity to the desktop stereo 116, as a result of NFC structures in both devices previously causing one of the devices to identify the other device, such as by the desktop stereo 116 obtaining a user identifier of the device 102. Such interaction may cause the desktop stereo 116 to automatically request music from a playlist for the user account of the user of device 102, so that the desktop stereo 116 automatically begin playing the music. In such a mode of operation, the device 102 may be used as a remote control, such as to fast-forward, rewind, or skip through songs in the playlist. Also, the transactions between the client devices and the servers in this example may be through one or more networks including the Internet 120.</p> <p><i>See</i> for example source code for the Android NexusQ application before 12.30.2011, including for example source code such as AAH support code located in athome/Core/ and libraries in athome/libs-aah, and athome/tungsten. <i>See also</i> for example, source code located in subdirectories</p> <p><a href="#">ATHOME/google_athome/gumby/src/com/timco/blocks/gumby/activities</a>, <a href="#">AAH/vendor/unbundled_google/packages/Music2/</a> and <a href="#">AAH/vendor/unbundled_google/packages/Music2/src/com/google/android/music/</a>.</p> <p><i>See also e.g.:</i></p> <p><a href="#">ATHOME/google_athome/gumby/src/com/timco/blocks/gumby/activities</a>;</p> <p><a href="#">AAH/vendor/unbundled_google/packages/Music2/src/com/google/android/music/activitymanagement</a>;</p> <p><a href="#">AAH/vendor/unbundled_google/packages/Music2/src/com/google/android/music/athome</a>;</p> <p><a href="#">AAH/vendor/unbundled_google/packages/Music2/res/values</a>.</p>
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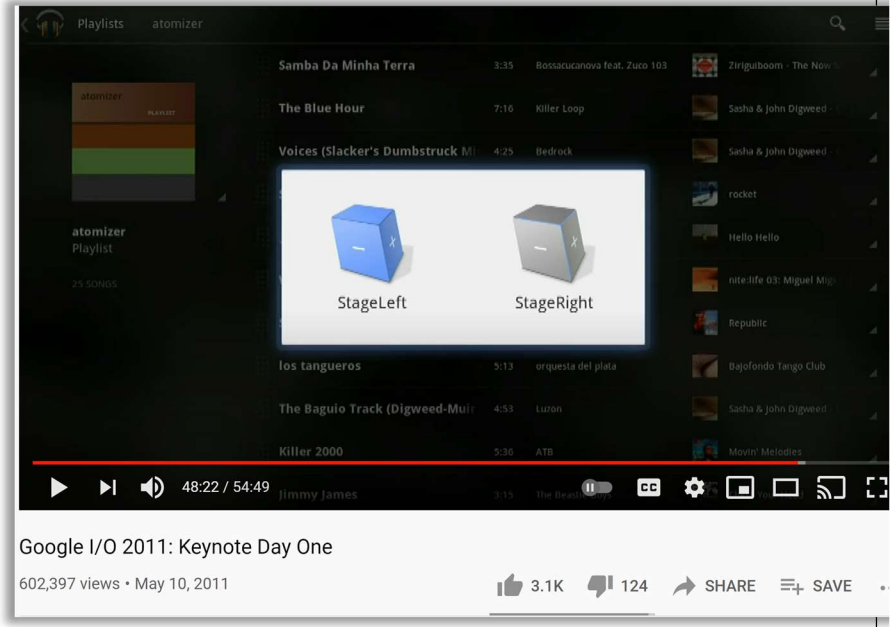
		<p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Riders I-J. Further discussion of the obviousness of this claim element is provided in Google's Invalidity Contentions Cover Pleading.</p>
[1g]	<p><i>after detecting the indication, transitioning from i) the first mode in which the computing device is configured for playback of the remote playback queue to ii) a second mode in which the computing device is configured to control the at least one given playback device's playback of the remote playback queue and the computing device is no longer configured for playback of the remote playback queue.</i></p>	<p>The Tungsten System discloses after detecting the indication, transitioning from i) the first mode in which the computing device is configured for playback of the remote playback queue to ii) a second mode in which the computing device is configured to control the at least one given playback device's playback of the remote playback queue and the computing device is no longer configured for playback of the remote playback queue.</p> <p>See e.g. [1]          "the functionality that you've seen here, it'll be part of the Android@Home framework"</p>  <p>Google I/O 2011: Keynote Day One          602,397 views • May 10, 2011</p>

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*See e.g.* [2]:

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*See e.g.* [3] at 7:61-8:14:

Once the streaming server system 114 receives an affirmative response from the registration server system 112, as shown by the arrows and box D, the streaming server system 114 may stream the media content to the device 102, as shown at Box E. In some implementations, the device 102 may forward or redirect the streaming data to the device 116, using a Bluetooth or similar data connection. In another example, the device 102 may have been moved in close proximity to the desktop stereo 116, as a result of NFC structures in both devices previously causing one of the devices to identify the other device, such as by the desktop stereo 116 obtaining a user identifier of the device 102. Such interaction may cause the desktop stereo 116 to automatically request music from a playlist for the user account of the user of device 102, so that the desktop stereo 116 automatically begin playing the music. In such a mode of operation, the device 102 may be used as a remote control, such as to fast-forward, rewind, or skip through songs in the playlist. Also, the transactions between the client devices and the servers in this example may be through one or more networks including the Internet 120.

*See* for example source code for the Android application before 12.30.2011, including for example source code located in subdirectories named vendor/unbundled\_google/packages/Music2” in top level directories e.g., froyo-ub-music-, fy-ub-a@h-core, and master-ub-music2-aah.

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		<p><i>See also e.g.:</i> AAH/vendor/unbundled_google/packages/Music2/src/com/google/android/music</p> <p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Riders I-J. Further discussion of the obviousness of this claim element is provided in Google's Invalidity Contentions Cover Pleading.</p>
[2]	<p><i>The computing device of claim 1, wherein the instruction comprises an instruction for the cloud-based computing system associated with the media service to provide the data identifying the next one or more media items to the given playback device for use in retrieving the at least one media item from the cloud-based computing system associated with the cloud-based media service.</i></p>	<p>The disclosures in independent claim [1] are hereby incorporated by reference. In addition, Tungsten System includes the instruction comprising an instruction for the cloud-based computing system associated with the media service to provide the data identifying the next one or more media items to the given playback device for use in retrieving the at least one media item from the cloud-based computing system associated with the cloud-based media service.</p> <p><i>See e.g. [1]</i> “the functionality that you’ve seen here, it’ll be part of the Android@Home framework”</p>

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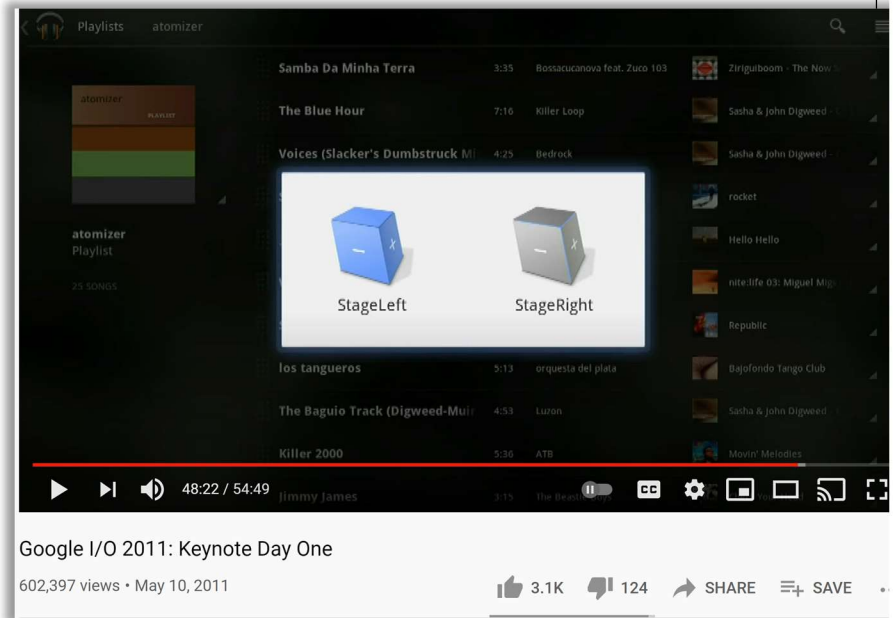
...

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Once the streaming server system 114 receives an affirmative response from the registration server system 112, as shown by the arrows and box D, the streaming server system 114 may stream the media content to the device 102, as shown at Box E. In some implementations, the device 102 may forward or redirect the streaming data to the device 116, using a Bluetooth or similar data



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connection. In another example, the device 102 may have been moved in close proximity to the desktop stereo 116, as a result of NFC structures in both devices previously causing one of the devices to identify the other device, such as by the desktop stereo 116 obtaining a user identifier of the device 102. Such interaction may cause the desktop stereo 116 to automatically request music from a playlist for the user account of the user of device 102, so that the desktop stereo 116 automatically begin playing the music. In such a mode of operation, the device 102 may be used as a remote control, such as to fast-forward, rewind, or skip through songs in the playlist. Also, the transactions between the client devices and the servers in this example may be through one or more networks including the Internet 120.

*See e.g.* [4]



Google Music beta demo from Google I/O 2011

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*See* for example source code for the Android application before 12.30.2011, including for example source code located in subdirectory "vendor/unbundled\_google/packages/Music2" in top



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		<p>level directories e.g.: froyo-ub-music-, fy-ub-a@h-core, and master-ub-music2-aah. <i>See also</i> AAH support code in athome/Core/ and libraries in athome/libs-aah, and athome/tungsten. <i>See also</i> for example, source code located in subdirectory  ATHOME/google_athome/blockhead/src/com/timco/blocks/blockhead/</p> <p><i>See also e.g.:</i>  ATHOME/google_athome/blockhead/src/com/timco/blocks/blockhead/apiserver;  ATHOME/google_athome/blockhead/src/com/timco/blocks/blockhead/db;  ATHOME/google_athome/blockhead/src/com/timco/blocks/blockhead/service.</p> <p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Riders I-J. Further discussion of the obviousness of this claim element is provided in Google's Invalidity Contentions Cover Pleading.</p>
[4a]	<p><i>The computing device of claim 1, wherein the representation of the one or more playback devices comprises at least one selectable indicator for a group of playback devices that includes the given playback device and one or more other playback devices that are to be configured for synchronous playback of the remote playback queue, and</i></p>	<p>The disclosures in independent claim [1] are hereby incorporated by reference. In addition, Tungsten System includes the representation of the one or more playback devices comprises at least one selectable indicator for a group of playback devices that includes the given playback device and one or more other playback devices that are to be configured for synchronous playback of the remote playback queue.</p> <p><i>See e.g. [1]</i>  “the functionality that you’ve seen here, it’ll be part of the Android@Home framework”</p>

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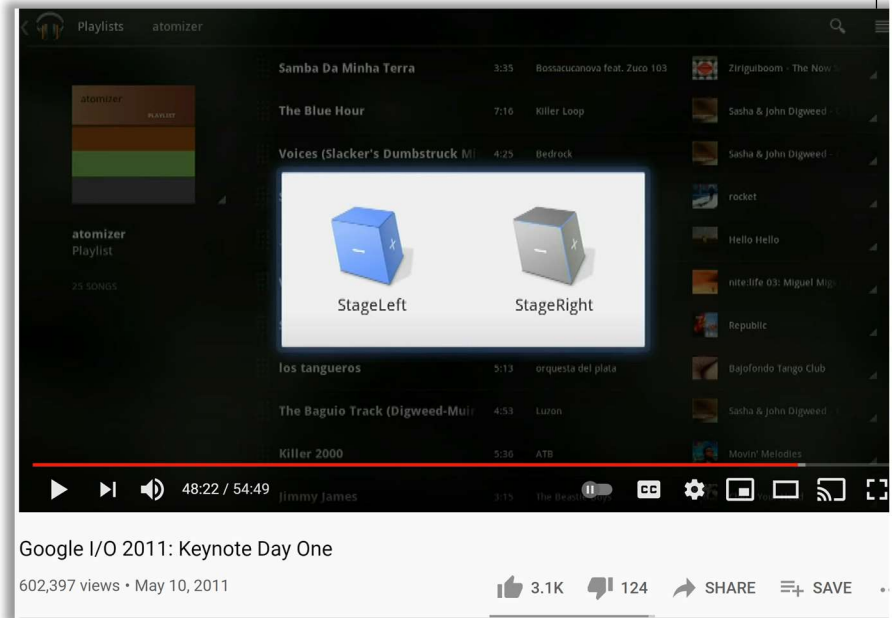
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“A Tungsten device runs the Android OS and the Android@Home Framework. *It’s always powered on and always connected to the cloud*”

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Once the streaming server system 114 receives an affirmative response from the registration server system 112, as shown by the arrows and box D, the streaming server system 114 may stream the media content to the device 102, as shown at Box E. In some implementations, the device 102 may forward or redirect the streaming data to the device 116, using a Bluetooth or similar data connection. In another example, the device 102 may have been


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		<p>moved in close proximity to the desktop stereo 116, as a result of NFC structures in both devices previously causing one of the devices to identify the other device, such as by the desktop stereo 116 obtaining a user identifier of the device 102. Such interaction may cause the desktop stereo 116 to automatically request music from a playlist for the user account of the user of device 102, so that the desktop stereo 116 automatically begin playing the music. In such a mode of operation, the device 102 may be used as a remote control, such as to fast-forward, rewind, or skip through songs in the playlist. Also, the transactions between the client devices and the servers in this example may be through one or more networks including the Internet 120.</p> <p><i>See e.g.</i> [3] e.g. at 16:41-55: IGS. 5A-5F are images of sequential action between physical pieces of media and an electronic music system. The media in this case include three different CD jewel cases that each may or may not have CD's currently in them, but that are provided with NFC capability, such as by having an NFC tag attached inside each package. The music system in this example is represented by an orb that includes NFC sensing and reading functionality. The orb is attached by wire to communicate with a computer system programmed to play pre-recorded digital music under appropriate circumstances. In a commercial implementation, the computer system could be a large-scale server system that stores previously acquired copies of a large variety of songs, and is able to stream the music to various users under licenses with the rights holders where that is necessary.</p> <p><i>See</i> for example source code for the Android application before 12.30.2011, including for example source code located at in subdirectories named “vendor/unbundled_google/packages/Music2” in top level directories e.g.: froyo-ub-music-, fy-ub-a@h-core, and master-ub-</p>
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		<p>music2-aah. <i>See also</i> AAH support code in athome/Core/ and libraries athome/libs-aah, and athome/tungsten. <i>See also</i> for example, source code located in subdirectories  ATHOME/google_athome/gumby/ and  ATHOME/google_athome/blockhead/src/com/timco/blocks/blockhead.  <i>See also e.g.:</i> ATHOME/google_athome/gumby/res/layout; ATHOME/google_athome/gumby/src/com/timco/blocks/gumby/activities; ATHOME/google_athome/blockhead/src/com/timco/blocks/blockhead/service; ATHOME/google_athome/blockhead/src/com/timco/blocks/blockhead.</p> <p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Riders J-K. Further discussion of the obviousness of this claim element is provided in Google's Invalidity Contentions Cover Pleading.</p>
[4b]	<p><i>wherein the user input indicating the selection of at least one given playback device from the one or more playback devices comprises user input indicating a selection of the group of playback devices.</i></p>	<p><i>See</i> element [4a] above.  <i>See</i> for example source code for the Android application before 12.30.2011, including for example, source code located in subdirectory ATHOME/google_athome/gumby.  <i>See also e.g.:</i> ATHOME/google_athome/gumby/res/layout; ATHOME/google_athome/gumby/src/com/timco/blocks/gumby/activities; ATHOME/google_athome/gumby/src/com/timoco/blocks/gumby/service.</p>
[9]	<p><i>The computing device of claim 8, wherein the transport control operation comprises one of a play operation, a pause operation, a skip forward operation, or a skip back operation.</i></p>	<p>The disclosures in the independent claim are hereby incorporated by reference. In addition, Tungsten System discloses the transport control operation comprises one of a play operation, a pause operation, a skip forward operation, or a skip back operation.</p>

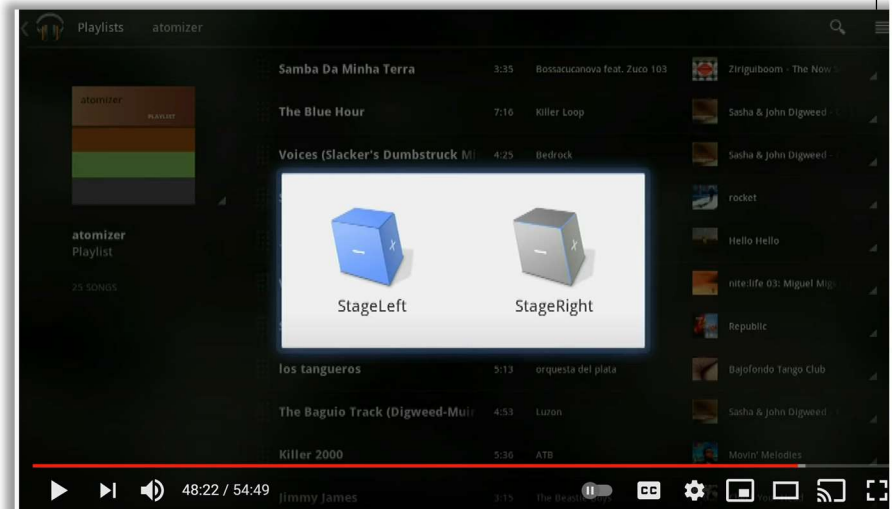
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		See e.g. claim element [1.g] above.
[11]	<i>The computing device of claim 1, wherein displaying the representation of the one or more playback devices comprises: displaying the representation of the one or more playback devices in response to receiving a selection of a displayed icon indicating that playback responsibility for the remote playback queue can be transferred.</i>	<p>The disclosures in independent claim [1] are hereby incorporated by reference. In addition, Tungsten System includes displaying the representation of the one or more playback devices comprises: displaying the representation of the one or more playback devices in response to receiving a selection of a displayed icon indicating that playback responsibility for the remote playback queue can be transferred.</p> <p>See e.g. [1]  “the functionality that you’ve seen here, it’ll be part of the Android@Home framework”</p>  <p>Google I/O 2011: Keynote Day One  602,397 views • May 10, 2011    3.1K    124    SHARE    SAVE    ...</p> <p>“A Tungsten device runs the Android OS and the Android@Home Framework. <i>It’s always powered on and always connected to the cloud</i>”</p>

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“Paul showed you *our music beta service on a phone and a tablet*. Here, we have *the same music service but working with these new devices*”

“You can imagine that this device is playing music in, say, your living room. If we take a look at the tablet Anand is using, we can see he's in the music app. *But there's a new feature to select an output device*. The tablet can direct music to *one or more Tungsten boxes* like the one we have here. Anand, why don't you start music on both of them. You can enjoy your music *synchronized throughout your house*, all *streaming through Music Beta*. When Anand tapped on those buttons, the music stream was sent transparently from one box to another. Since the boxes are running Android, *they just pull the music directly from the music library in the cloud*.” (Joe Britt)



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See for example source code for the Android application before 12.30.2011, including for example source code located e.g. in the



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		<p>following subdirectory:  "vendor/unbundled_google/packages/Music2" in top level directories e.g.: froyo-ub-music, fy-ub-a@h-core, and master-ub-music2-aah. <i>See also for example</i> AAH support code in athome/Core/Broker, athome/Core/RemoteControl and libraries in athome/libs-aah, athome/tungsten. <i>See also for example</i>, source code located in subdirectoy ATHOME/google_athome/gumby/</p> <p><i>See also e.g.:</i> ATHOME/google_athome/gumby/res/layout; ATHOME/google_athome/gumby/src/com/timco/blocks/gumby/activities; ATHOME/google_athome/gumby/res/values; ATHOME/google_athome/gumby/res/menu; ATHOME/google_athome/gumby/src/com/timco/blocks/gumby/activities.</p> <p>To the extent it is argued that these references do not disclose this claim element, it would have at least been obvious to combine these references with the references cited in Rider J. Further discussion of the obviousness of this claim element is provided in Google's Invalidity Contentions Cover Pleading.</p>
[12pre]	<i>A non-transitory computer-readable medium having stored thereon program instructions that, when executed by at least one processor, cause a computing device to perform functions comprising:</i>	The disclosures in independent claim [1] are hereby incorporated by reference. <i>See e.g.</i> claim element [1pre] above.
[12a]	<i>operating in a first mode in which the computing device is configured for playback of a remote playback queue provided by a cloud-based computing system associated with a cloud-based media service;</i>	The disclosures in independent claim [1] are hereby incorporated by reference. <i>See e.g.</i> claim element [1a] above.
[12b]	<i>while operating in the first mode, displaying a representation of one or more playback devices in a media playback system that are each i) communicatively coupled to the computing device</i>	The disclosures in independent claim [1] are hereby incorporated by reference. <i>See e.g.</i> claim element [1b] above.

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	<i>over a data network and ii) available to accept playback responsibility for the remote playback queue;</i>	
[12c]	<i>while displaying the representation of the one or more playback devices, receiving user input indicating a selection of at least one given playback device from the one or more playback devices;</i>	The disclosures in independent claim [1] are hereby incorporated by reference. <i>See e.g.</i> claim element [1c] above.
[12d]	<i>based on receiving the user input, transmitting an instruction for the at least one given playback device to take over responsibility for playback of the remote playback queue from the computing device, wherein the instruction configures the at least one given playback device to (i) communicate with the cloud-based computing system in order to obtain data identifying a next one or more media items that are in the remote playback queue, (ii) use the obtained data to retrieve at least one media item in the remote playback queue from the cloud-based media service; and (iii) play back the retrieved at least one media item;</i>	The disclosures in independent claim [1] are hereby incorporated by reference. <i>See e.g.</i> claim element [1d] and [1e] above.
[12e]	<i>detecting an indication that playback responsibility for the remote playback queue has been successfully transferred from the computing device to the at least one given playback device; and</i>	The disclosures in independent claim [1] are hereby incorporated by reference. <i>See e.g.</i> claim element [1f] above.
[12f]	<i>after detecting the indication, transitioning from i) the first mode in which the computing device is configured for playback of the remote playback queue to ii) a second mode in which the computing device is configured to control the at least one given playback device's playback of the remote playback queue and the computing device is no longer configured for playback of the remote playback queue.</i>	The disclosures in independent claim [1] are hereby incorporated by reference. <i>See e.g.</i> claim element [1g] above.
[13]	<i>The non-transitory computer-readable medium of claim 12, wherein the instruction comprises an instruction for the cloud-based computing system associated with the cloud-based media service to provide the data identifying the next one or more media items to the given playback device for use in</i>	<i>See claim [2] above.</i>

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	<i>obtaining the at least one media item from the cloud-based computing system associated with the cloud-based media service.</i>	
[16]	<i>The computing device of claim 1, further comprising program instructions stored on the non-transitory computer-readable medium that, when executed by the at least one processor, cause the computing device to perform functions comprising: before displaying the representation of the one or more playback devices, receiving an indication that the one or more playback devices in the media playback system are available to accept playback responsibility for the remote playback queue.</i>	Tungsten System discloses the computing device of claim 1 further comprising program instructions stored on the non-transitory computer-readable medium that, when executed by the at least one processor, cause the computing device to perform functions comprising before displaying the representation of the one or more playback devices, receiving an indication that the one or more playback devices in the media playback system are available to accept playback responsibility for the remote playback queue. See e.g. claim element [1b] above.